2–4, dark phase, Pichincha. 7–9, light phase, Pichincha. 11, 13, 15, dark phase, Pillaro. 16, 18, 20, light phase, Pillaro. Figs. 6, 10.—*Naesiotus quitensis orinus*, n. subsp. 6, Paratype. 10, Type. Figs. 12, 14.—*Naesiotus quitensis ambatensis*, n. subsp. 12, Type. 14, Paratype. Figs. 17, 19.—*Naesiotus quitensis vermiculatus*, n. subsp. 17, Type. 19, Paratype.

THE OZARK AMNICOLAS

BY LESLIE HUBRICHT

In the eastern Ozark region of Missouri are many springs and caves in which are found small snails of the genus *Amnicola*. For several years, as opportunity permitted, the author has been studying these snails. This study has resulted in new information concerning the status and distribution of the previously known species, together with one new species and two new subspecies.

Not enough collecting has been done to determine the exact distribution of any form. Only the region in the vicinity of St. Louis has been studied carefully. Several caves and springs in the western Ozarks have been visited but no amnicolas have been found. This does not, however, mean that they do not occur in that region. These snails are very sporadic in their occurrence and unless a region has been explored carefully they may be overlooked. A stream may be fed by a dozen or more similar springs issuing from the same limestone formation and yet only one or two will contain the snails. The subterranean forms have been found only in running streams with rock or very coarse gravel bottoms.

AMNICOLA ALDRICHI ALDRICHI (Call & Beecher). Pl. 14, figs. A, D, E, F, G, H.

Bythinella aldrichi Call & Beecher, 1886. Bull. Washburn Coll. Lab. Nat. Hist. 1: 190–192.

Amnicola missouriensis Pilsbry, 1898. Nautilus 12: 43.

Original description: "Shell small, subimperforate, elevated, cylindrical, thin; apex obtuse; whorls four, convex, slightly shouldered above, body-whorl twice the size of rest of shell, not marked by lines of growth; suture distinctly and regularly impressed; aperture ovately rounded, nearly as long as broad, scarcely angled posteriorly, within whitish; peristome simple, slightly reflexed in columelar region, continuous as a slight callus

over parietal wall; epidermis light horn color or greenish, shining.

"Operculum light horn color; excentrically spiral, with polar point pit-like and nearly central, lines of accretion inconspicuous."

The animal is black or gray with well developed eyes.

	Ht.	Diam.	Aper. Ht.	Aper. Diam.	No. of Whorls	Index
	mm.	*mm.*	*mm.*	*mm.*		
Topotype	2.2	1.5	1.1	0.9	4.0	1.47
"	2.0	1.5	1.0	1.0	3.7	1.33
Montauk Spring	3.1	1.9	1.4	1.2	4.3	1.63
" "	3.0	1.9	1.3	1.1	4.5	1.58
Spring near Koester	2.4	1.8	1.1	1.1	4.0	1.33
" " "	2.2	1.7	1.1	1.0	3.5	1.29

A. missouriensis is based upon immature shells. It is not distinguishable from specimens of *A. a. aldrichi* with the same number of whorls.

Localities.—Missouri: St. Louis Co.: spring on Glencoe Creek, 2.8 miles northwest of Glencoe Station; spring on Antire Creek, 4 miles east of Eureka. Jefferson Co.: spring on Antire Creek, 4 miles south of Tyson; Becker's Spring, 0.5 mile east of Seckman; spring on hillside, Moss Hollow, 2.5 miles southeast of Antonia; spring on bluff above Glaize Creek, 2 miles west of Barnhart. Crawford Co.: Onondaga Spring, 5 miles southeast of Leasburg. St. Francois Co.: spring, 0.4 mile south of Koester. Franklin Co.: spring 2 miles west of Lone Dell. Dent Co.: Montauk Spring. Shannon Co.: Cave Hollow Spring, 6 miles north of Birchtree. Butler Co.: Keener Spring, Keener. Reynolds Co.: spring (type locality). Carter Co.: (type locality of *A. missouriensis*).

At Montauk Spring about one shell in five hundred is banded with red.

AMNICOLA ALDRICHI INSOLITA, new subspecies. Pl. 14, figs. B, C.

The shell differs from that of the typical form in having deeper sutures, strongly shouldered whorls, and a free lip.

	Ht.	Diam.	Aper. Ht.	Aper. Diam.	No. of Whorls	Index
	mm.	*mm.*	*mm.*	*mm.*		
Holotype	2.4	1.7	1.1	1.0	4.0	1.41
Paratype	2.3	1.9	1.3	1.1	3.5	1.21
"	2.4	1.8	1.2	1.2	4.0	1.33

Holotype A.N.S.P. No. 175556, paratypes, A.N.S.P. No. 175557; paratypes, No. A4418, author's collection.

Localities.—Missouri: Phelps Co.: Meramec Spring, 5 miles southeast of St. James. Wayne Co.: Coldwater Spring, Coldwater (type locality).

AMNICOLA ALDRICHI ANTROECETES, new subspecies. Pl. 14, figs. I, J, K.

Shell not distinguishable from the more slender forms of *A. a. aldrichi*. Operculum apparently without growth lines or sculpture. Animal unpigmented and blind.

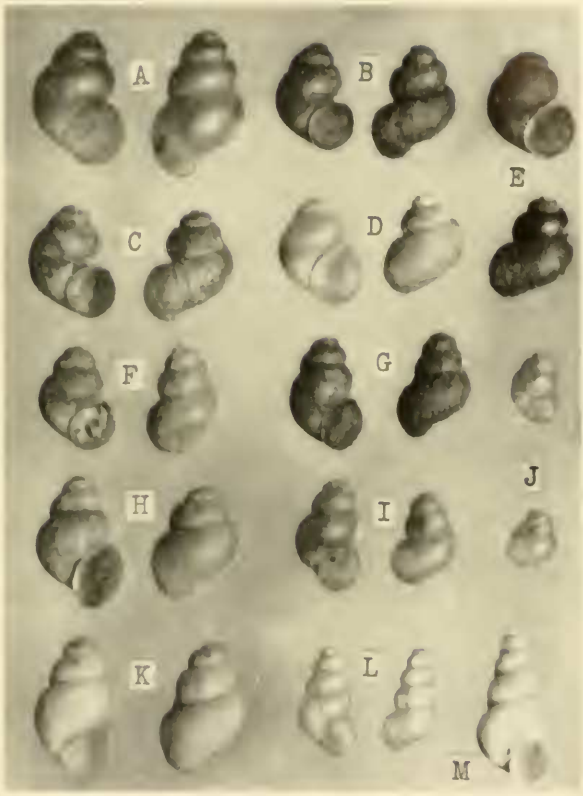
Holotype A.N.S.P. No. 175554, paratypes, A.N.S.P. No. 175555; paratypes, No. A4295, author's collection.

Localities.—Illinois: St. Clair Co.: Stemmler's Cave, 2 miles south of Bluffside (type locality). Missouri: St. Louis Co.: Cliff Cave. Crawford Co.: Cathedral Cave, 5 miles southeast of Leasburg; Missouri Caverns, 5 miles southeast of Leasburg. Phelps Co.: Saltpeter Cave, 7 miles north of Newburg. Shannon Co.: twilight zone, Round Spring Cavern Spring, 12 miles north of Eminence.

	Ht.	Diam.	Aper. Ht.	Aper. Diam.	No. of Whorls	Index
	mm.	*mm.*	*mm.*	*mm.*		
Holotype	2.9	1.7	1.3	1.2	4.0	1.71
Paratype	3.2	2.0	1.3	1.3	4.2	1.60
Round Spr. Cav. Spr.	2.3	1.4	1.0	0.8	4.0	1.64
" " " "	2.2	1.5	1.0	0.9	4.0	1.47
Cathedral Cave	1.5	1.0	0.7	0.6	4.0	1.50
" "	1.3	0.9	0.6	0.6	3.5	1.44
Missouri Caverns	1.6	1.2	0.8	0.6	3.8	1.33
" "	1.4	1.0	0.7	0.6	3.7	1.40
Saltpeter Cave	1.9	1.2	0.8	0.7	4.0	1.68
" "	1.6	1.1	0.8	0.6	4.0	1.45

Because it is quite probable that this blind form has developed independently in each cave stream in which it occurs it is treated as a subspecies, although the differences in the animal, in the absence of intergrading forms, might properly be considered of specific rank.

The size of these snails is extremely variable and is apparently determined by the food supply. They have always been found



Amnicola aldrichi aldrichi: A, Montauk Spring (left, banded). D, 2 miles west of Barnhart. E, 0.4 mile south of Koester. F, Reynolds Co. (topotypes). G, 2 miles west of Lone Dell. H, 2.8 miles northwest of Glencoe Station. *A. a. insolita:* B, Meramec Spring. C, Coldwater (paratypes). *A. a. antrocoetes:* I, Round Spring Cavern Spring. J, Cathedral Cave. K, Stemmler's Cave (paratypes). *A. proserpina:* L, Rice's Cave (paratypes). M, Kirkwood.